



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁵ : C12N 15/62, 15/13, 15/14, 15/12 C07K 13/00, A61K 39/395, 37/02 C12N 5/10	A3	(11) International Publication Number: WO 91/08298 (43) International Publication Date: 13 June 1991 (13.06.91)
(21) International Application Number: PCT/US90/06849 (22) International Filing Date: 21 November 1990 (21.11.90) (30) Priority data: 444,625 22 November 1989 (22.11.89) US (71) Applicant: GENENTECH, INC. [US/US]; 460 Point San Bruno Boulevard, South San Francisco, CA 94080 (US). (72) Inventors: CAPON, Daniel, J. ; 817 Oregon Street, San Mateo, CA 94402 (US). LASKY, Laurence, A. ; Star Route Box 460, Sausalito, CA 94965 (US). (74) Agents: ADLER, Carolyn, R. et al.; Genentech, Inc., 460 Point San Bruno Boulevard, South San Francisco, CA 94080 (US).		(81) Designated States: AT (European patent), BE (European patent), CA, CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 17 October 1991 (17.10.91)
(54) Title: FUSION PROTEINS CONSISTING OF A LIGAND BINDING PROTEIN AND A STABLE PLASMA PROTEIN <h3 style="text-align: center;">Murine PLN Homing Receptor IgG Chimeras</h3> <div style="text-align: center;"> </div>		
(57) Abstract Novel polypeptides are provided, together with methods for making and using them, and nucleic acids encoding them. These polypeptides are useful as cell surface adhesion molecules and ligands, and are useful in therapeutic or diagnostic compositions and methods		

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INTERNATIONAL SEARCH REPORT

International Application No PCT/US 90/06849

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ¹		
According to International Patent Classification (IPC) or to both National Classification and IPC IPC5: C 12 N 15/62, 15/13, 15/14, 15/12, C 07 K 13/00 A 61 K 39/395, 37/02, C 12 N 5/10		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
IPC5	C 12 N; C 07 K; A 61 K	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category *	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
E	WO, A1, 9104329 (ABBOTT LABORATORIES) 4 April 1991, see especially p.14 line 33-p. 15 line 15 --	1-5, 9- 11, 13- 17, 19- 22, 42- 49
E	EP, A2, 0414178 (THE GENERAL HOSPITAL CORPORATION) 27 February 1991, see the whole document --	1-5, 7- 11, 13- 29, 40- 49
E	EP, A1, 0413622 (RHONE-POULENC SANTE) 20 February 1991, see the whole document --	1, 34- 49
<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>* Special categories of cited documents:¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 48%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p> </div> </div>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search:	Date of Mailing of this International Search Report	
27th August 1991	13. 09. 91	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	Falk Heck	

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
E	WO, A1, 9100360 (MEDAREX, INC.) 10 January 1991, see the whole document --	1-5,7- 11,13- 29,40- 49
E	WO, A1, 9014103 (SCRIPPS CLINIC AND RESEARCH FOUNDATION) 29 November 1990, see the whole document --	1-5,7- 11,13- 29,40- 49
E	EP, A1, 0399666 (DELTA BIOTECHNOLOGY LIMITED) 28 November 1990, see the whole document --	1,34- 49
P,X	EP, A1, 0394827 (F. HOFFMANN-LA ROCHE AG) 31 October 1990, see the whole document --	1-5,7- 11,13- 29,40- 49
P,X	EP, A2, 0391088 (THE CENTER FOR BLOOD RESEARCH) 10 October 1990, see especially claims 12-13 --	1-5,7- 11,13- 29,40- 49
P,A	EP, A1, 0386906 (DANA FARBER CANCER INSTITUTE) 12 September 1990, see the whole document --	6,12,27, 30-33, 36
P,X	WO, A1, 9005144 (MEDICAL RESEARCH COUNCIL) 17 May 1990, see especially claims 1-5 --	1-5,7- 11,13- 29,40- 49

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
P,X	WO, A1, 9002338 (THE GENERAL HOSPITAL CORPORATION) 8 March 1990, see the whole document --	1-5,7- 11,13- 21,40- 49
P,X	EP, A2, 0346316 (KABIGEN AB) 13 December 1989, see the whole document --	1-5,7- 11,13- 21,40- 49
X	EP, A3, 0325262 (THE GENERAL HOSPITAL CORPORATION) 26 July 1989, see the whole document	1-5,7- 11,13- 29,40- 49
Y		1,34- 49
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Y		1,34- 49
Y	EP, A1, 0322094 (DELTA BIOTECHNOLOGY LIMITED) 28 June 1989, see the whole document --	1,34- 49
X	EP, A1, 0314317 (GENENTECH, INC.) 3 May 1989, see especially the abstract, p. 4 line 57-p. 5, line 2, the claims --	1-5,7- 11,13- 49
Y	EP, A1, 0308381 (SKANDIGEN AB ET AL.) 22 March 1989, see the whole document --	1,34- 49

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
X	EP, A2, 0294703 (DANA-FARBER CANCER INSTITUTE, INC.) 14 December 1988, see the whole document --	1-5,8- 11,13- 17,42- 49
X	EP, A1, 0288809 (HOECHST AKTIENGESELLSCHAFT) 2 November 1988, see the whole document --	1,42- 49
X	EP, A2, 0271227 (THE GENERAL HOSPITAL CORPORATION) 15 June 1988, see the whole document --	1-5,8- 11,13- 17,42- 49
X	EP, A2, 0207402 (BAYER AG) 7 January 1987, see especially claims 6 and 10 --	1-5,8- 11,13- 17,42- 49
X	EP, A1, 0125023 (GENENTECH, INC.) 14 November 1984, see especially p. 29 lines 7-20 --	1-5,8- 11,13- 17,42- 49
P,X	J. Cell. Biochem. Suppl. 0 (14 part B), 1990, see page 84, abstract CE217, S.R. Watson et al.: "Characterization and activities of murine peripheral lymph node homing receptor" --	1-5,7- 11,13- 21,42- 49
A	Letters to Nature, vol. 342, November 1989, D. Camerini et al.: "Leu-8/TQ1 is the human equivalent of the Mel-14 lymph node homing receptor ", see page 78 - page 82 --	6,12,27, 30-33, 36

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	Proc. Natl. Acad. Sci., vol. 86, July 1989, M.H. siegelman et al.: "Human homologue of mouse lymph node homing receptor: Evolutionary conservation at tandem cell interaction domains", see page 5562 - page 5566 --	6,12,27, 30-33, 36
A	The Journal of Cell Biology, vol. 109, July 1989, B.R. Bowen et al.: "Characterization of a human homologue of the murine peripheral lymph node homing receptor", see page 421 - page 427 --	6,12,27, 30-33, 36
X	Letters to Nature, vol. 339, May 1989, A. Traunecker et al.: "Highly efficient neutralization of HIV with recombinant CD4-immunoglobulin molecules", see page 68 - page 70 --	1-5,7- 11,13- 29,42- 49
X	Nature, vol. 337, February 1989, D.J. Capon et al.: "Designing CD4 immunoadhesins for AIDS therapy", see page 525 - page 531 --	1-5,7- 11,13- 29,42- 49
Y	Chemical Abstracts, volume 109, no. 25, 19 July 1988, (Columbus, Ohio, US), Reed, Roberta G. et al.: "Non-resolving jaundice: bilirubin covalently attached to serum albumin circulates with the same metabolic half-life as albumin", see page 587, abstract 227803g, & Clin. Chem. 1988, 34(10), 1992-1994 --	1,34- 49
X	Nature, vol. 312, December 1984, M. S. Neuberger et al.: "Recombinant antibodies possessing novel effector functions", see page 604 - page 608 -- -----	1-5,8- 11,13- 21,42- 49

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

V. ☒ OBSERVATION WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE ¹

This International search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim numbers _____ because they relate to subject matter not required to be searched by this Authority, namely _____
2. ☒ Claim numbers 1-5,7-11,13-26,28,29,34-49 because they relate to parts of the International application that do not comply with the prescribed requirements to such an extent that no meaningful International search can be carried out, specifically: for further information see form PCT/ISA/206 dd 16/04/91
3. ☐ Claim numbers _____ because they are dependent claims and are not drafted in accordance with the second and third sentences of PCT Rule 6.4(a)

VI. ☒ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING ²

This International Searching Authority found multiple inventions in this International application as follows:

1. claims 6,12 completely, (1-5,8-11,13-22,40,42-49) partially; 2. claims 7 completely, (1-5,8-22,40,42-29) partially; 3. claims 23 completely, (1-5,8-22,40,42-49) partially; 4. claims 24 completely, (1-5,8-22,40,42-49) partially; 5. claims 25-33; 6. claims 34,35,39; 7. claims 38,41

for further information see form PCT/ISA/206 dd 16/04/91

1. ☒ As all required additional search fees were timely paid by the applicant, this International search report covers all searchable claims of the International application
2. ☐ As only some of the required additional search fees were timely paid by the applicant, this International search report covers only those claims of the International application for which fees were paid, specifically claims _____
3. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International search report is restricted to the invention first mentioned in the claims, it is covered by claim numbers _____
4. ☐ As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee

Remark on Protest

- ☒ The additional search fees were accompanied by applicant's protest
- ☐ No protest accompanied the payment of additional search fees

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO. PCT/US 90/06849**

SA 43043

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 27/06/91. The European Patent office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A1- 04329	04/04/91	NONE	
EP-A2- 0414178	27/02/91	AU-D- 6429590 WO-A- 91/02743	03/04/91 07/03/91
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For more details about this annex : see Official Journal of the European patent Office, No. 12/82

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ON INTERNATIONAL PATENT APPLICATION NO. PCT/US 90/06849**

SA 43043

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